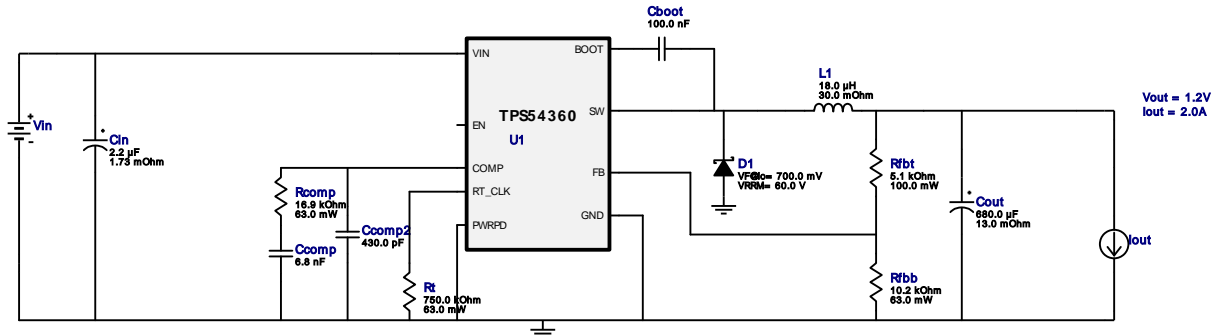


WEBENCH® Design Report

Design : 4466246/46 TPS54360DDAR
TPS54360DDAR 36.0V-48.0V to 1.20V @ 2.0A



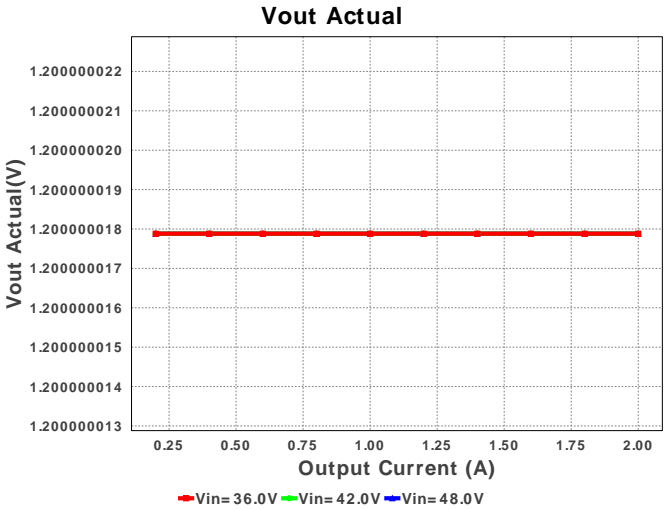
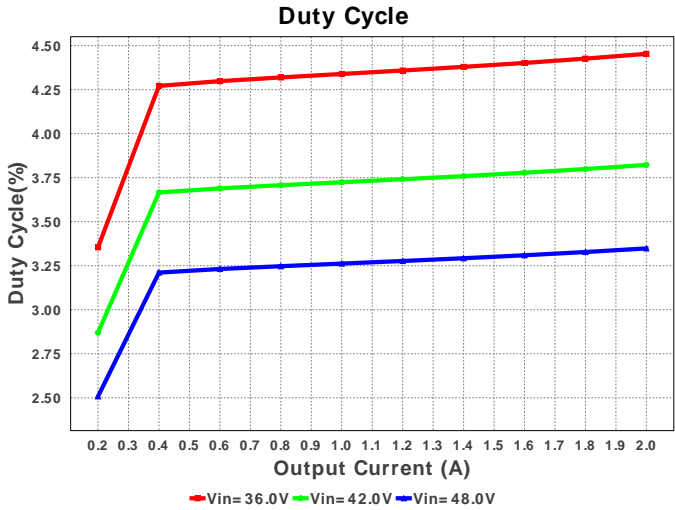
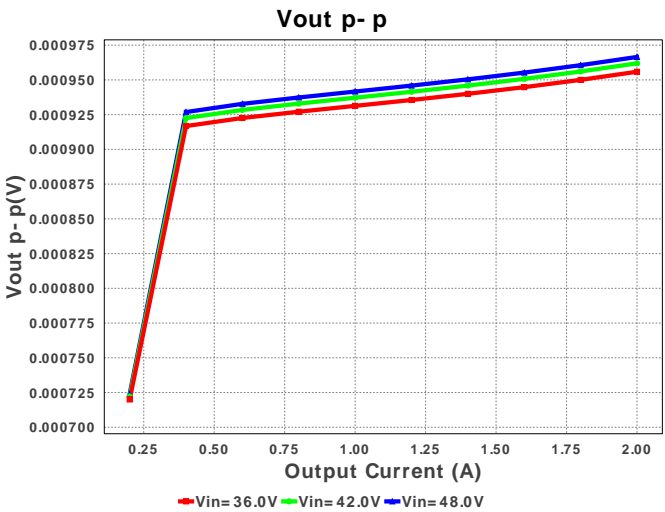
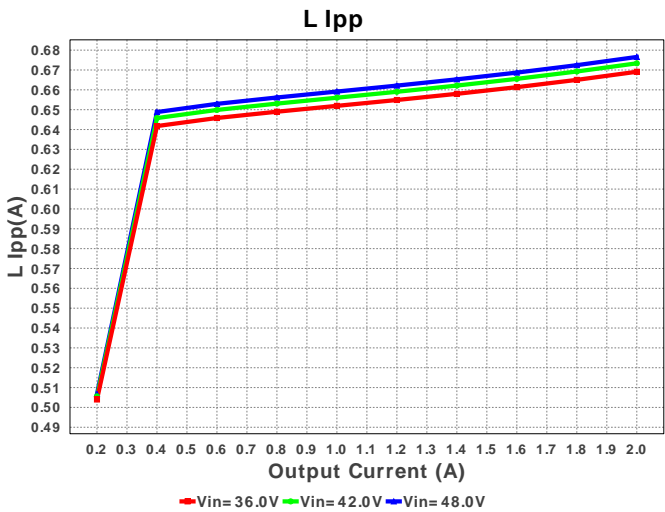
Electrical BOM

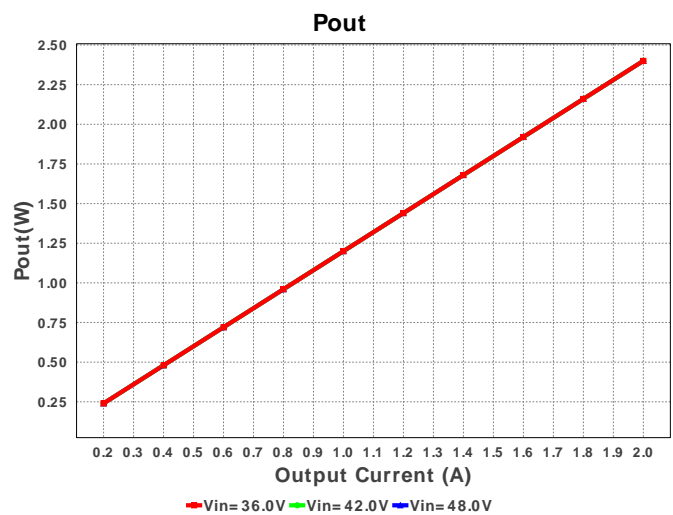
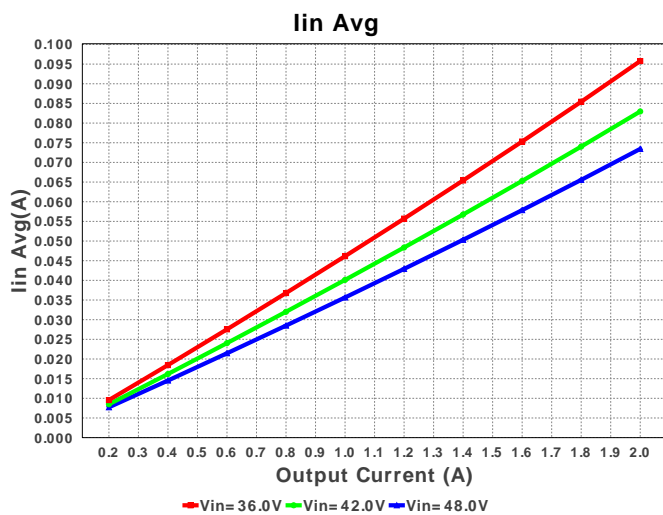
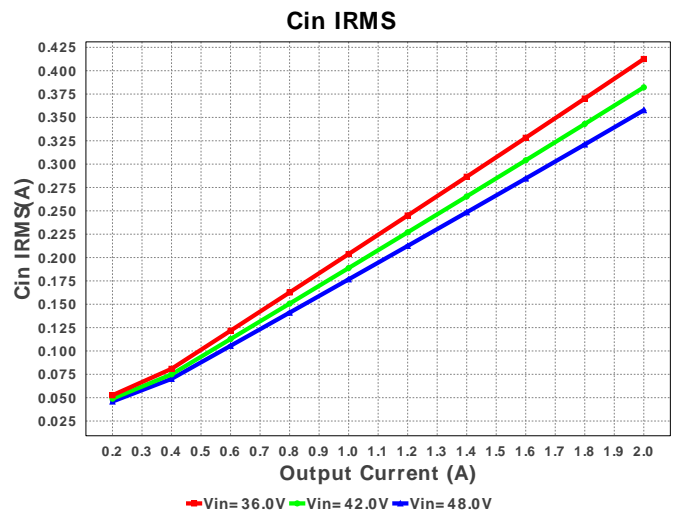
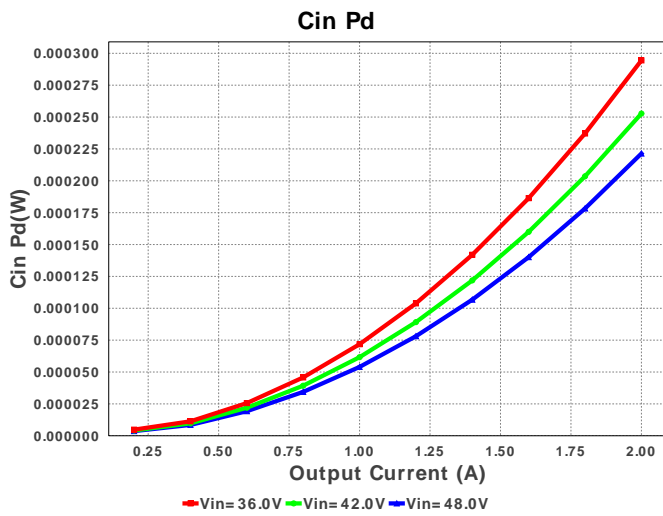
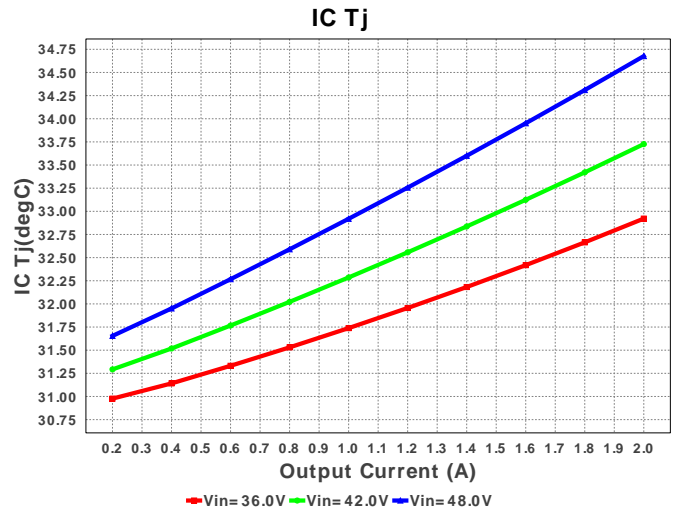
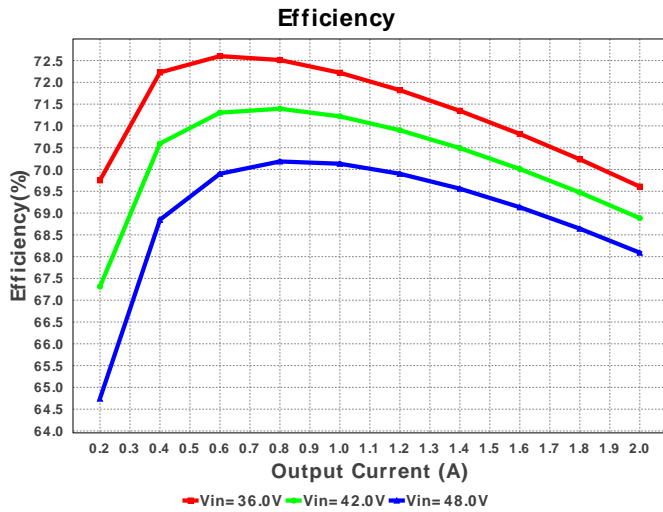
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
2.	Ccomp	Yageo America	CC0805KRX7R9BB682 Series= X7R	Cap= 6.8 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
3.	Ccomp2	MuRata	GRM1555C1E431JA01D Series= C0G/NP0	Cap= 430.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
4.	Cin	TDK	C3225X7R2A225K230AB Series= X7R	Cap= 2.2 uF ESR= 1.73 mOhm VDC= 100.0 V IRMS= 5.5932 A	1	\$0.19	 1210_250 15 mm ²
5.	Cout	Panasonic	2R5SVP680M Series= SVP	Cap= 680.0 uF ESR= 13.0 mOhm VDC= 2.5 V IRMS= 4.52 A	1	\$0.70	 SM_RADIAL_8MM 113 mm ²
6.	D1	Diodes Inc.	B360A-13-F	VF@Io= 700.0 mV VRRM= 60.0 V	1	\$0.12	 SMA 37 mm ²
7.	L1	Coilcraft	MSS1260-183MLB	L= 18.0 uH DCR= 30.0 mOhm	1	\$0.68	 MSS1260 204 mm ²
8.	Rcomp	Vishay-Dale	CRCW040216K9FKED Series= CRCW..e3	Res= 16.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
9.	Rfbb	Vishay-Dale	CRCW040210K2FKED Series= CRCW..e3	Res= 10.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
10.	Rfbt	Yageo America	RC0603FR-075K1L Series= ?	Res= 5.1 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	 0603 5 mm ²
11.	Rt	Vishay-Dale	CRCW0402750KFKED Series= CRCW..e3	Res= 750.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
12.	U1	Texas Instruments	TPS54360DDAR	Switcher	1	\$2.10	

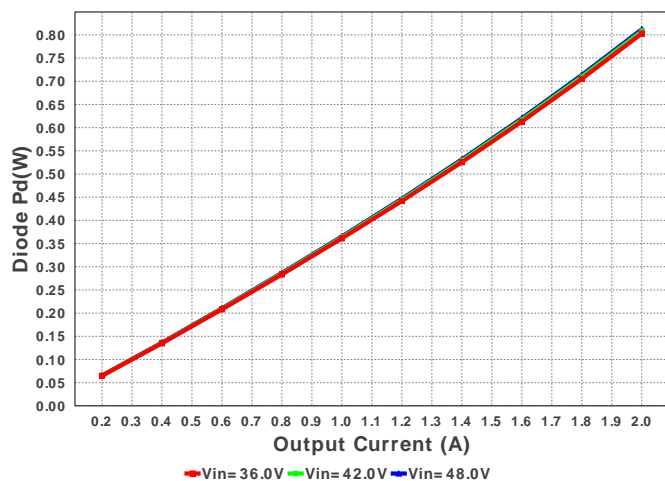


R-PDSO-G8 57 mm²

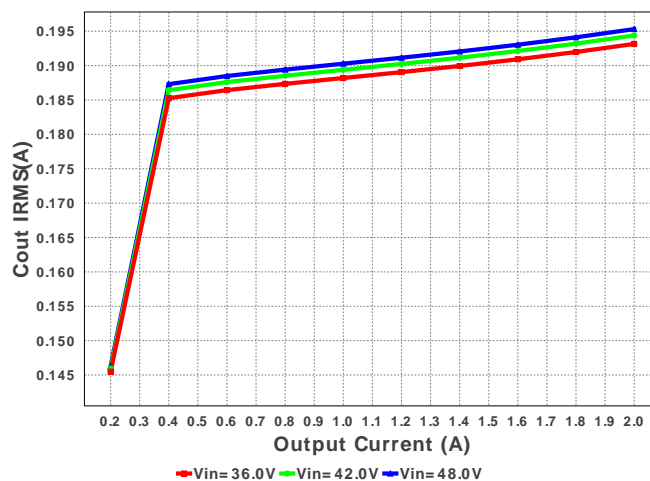




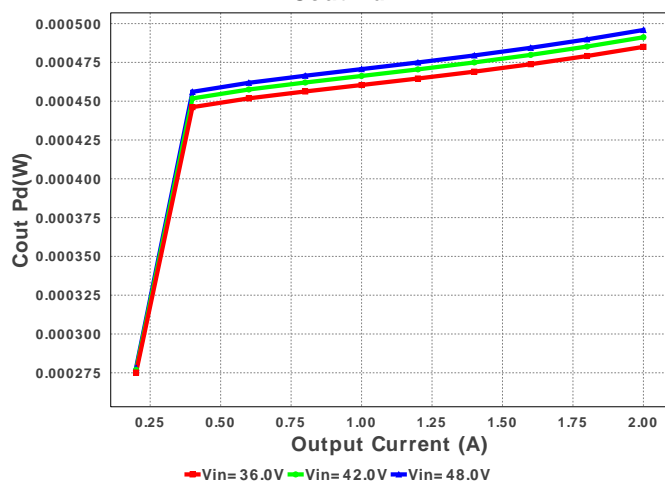
Diode Pd



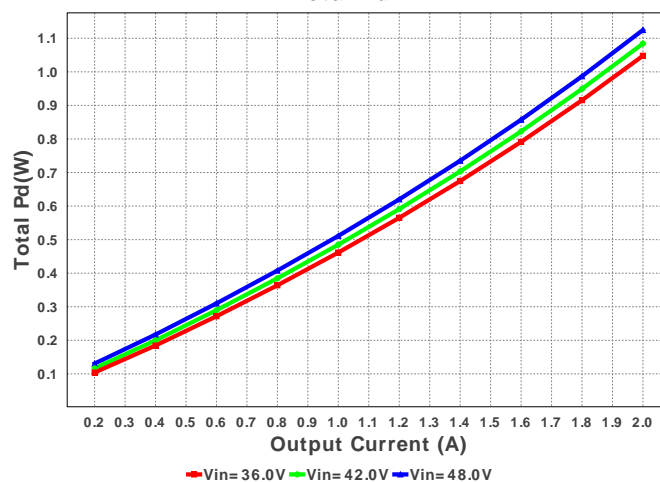
Cout IRMS



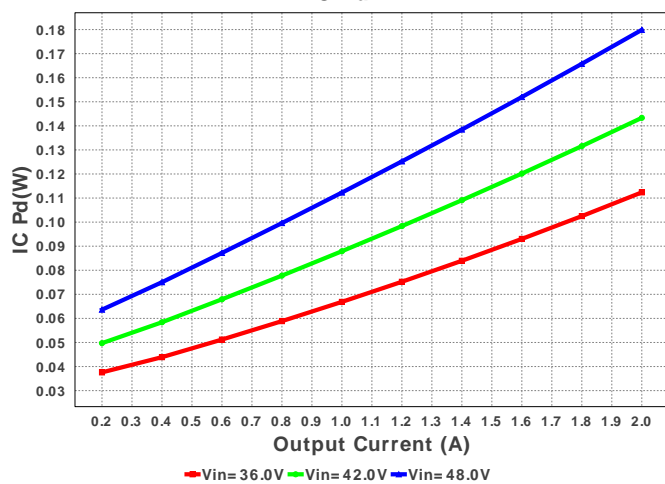
Cout Pd



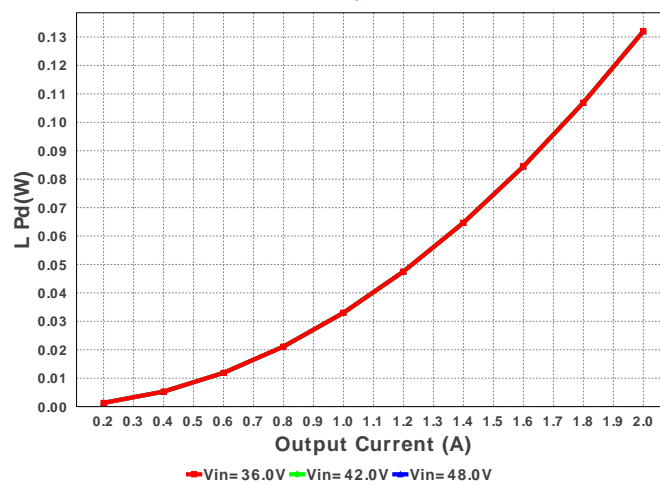
Total Pd

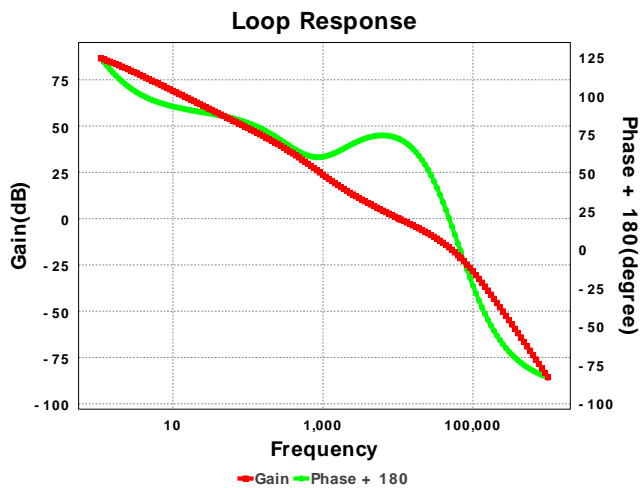


IC Pd



L Pd





Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	361.601 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	199.764 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	74.964 mA	Current	Average input current
4.	L Ipp	692.0 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	12	General	Total Design BOM count
6.	FootPrint	454.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	128.678 kHz	General	Switching frequency
8.	Pout	2.4 W	General	Total output power
9.	Total BOM	\$3.86	General	Total BOM Cost
10.	ICThetaJA Effective	26.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
11.	Low Freq Gain	86.522 dB	Op_Point	Gain at 10Hz
12.	Vout Actual	1.2 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
13.	Vout OP	1.2 V	Op_Point	Operational Output Voltage
14.	Cross Freq	10.347 kHz	Op_point	Bode plot crossover frequency
15.	Duty Cycle	3.425 %	Op_point	Duty cycle
16.	Efficiency	66.699 %	Op_point	Steady state efficiency
17.	Gain Marg	-21.005 dB	Op_point	Bode Plot Gain Margin
18.	IC Tj	34.685 degC	Op_point	IC junction temperature
19.	IOUT_OP	2.0 A	Op_point	Iout operating point
20.	Phase Marg	72.493 deg	Op_point	Bode Plot Phase Margin
21.	VIN_OP	48.0 V	Op_point	Vin operating point
22.	Vout p-p	988.567 μ V	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	226.207 μ W	Power	Input capacitor power dissipation
24.	Cout Pd	518.775 μ W	Power	Output capacitor power dissipation
25.	Diode Pd	885.349 mW	Power	Diode power dissipation
26.	IC Pd	180.174 mW	Power	IC power dissipation
27.	L Pd	132.0 mW	Power	Inductor power dissipation
28.	Total Pd	1.198 W	Power	Total Power Dissipation
29.	Vout Tolerance	1.68 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	48.0	Maximum input voltage
3.	VinMin	36.0	Minimum input voltage
4.	Vout	1.2	Output Voltage
5.	base_pn	TPS54360	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS54360** Product Folder : <http://www.ti.com/product/TPS54360> : contains the data sheet and other resources.

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